

16 Toxicological, bacteriological, virological analysis of the beverages

The Coca-Cola Company Northwest Europe Division asked for toxicological analysis on sample of beverages to:

- 1) The Coca-Cola Company laboratory, Atlanta
- 2) The Netherland Voeding, Organisation for Applied Scientific Research (TNO)
- 3) The National Medical Services (NMS), U.S.A.
- 4) The Analyses Controles expertises (ACE), France

Comments and health risk assessment based on the above analysis and asked by Coca-Cola Company were made by:

- 1) The Danish Toxicology Centre (DTC)
- 2) The Research Institute of Toxicology (Utrecht University)
- 3) The Fraunhofer Institute (Institute Toxikologie und Aerosolforschung, Hannover)

The Food Inspection of the Ministry of Public Health of Belgium ordered for laboratory analysis on beverages coming from the different schools concerned. No technical descriptions of the performed analyses were provided.

Two substances were incriminated to be responsible for an off odour:

- 1) Carbonyl sulphide (COS) and hydrogen sulphide (H₂S) in the Coca-Cola bottles sent to the school of Bornem and supplied by the Antwerpen production site.
- 2) P-chloro-m-cresol (PCMC) also known as 3-methyl-4-chlorophenol on the surface of soft drink cans sent to the other schools and supplied by the Dunkerque production site.

16.1 Hydrogen sulphide (H₂S) and carbonyl sulphide (COS)

Upon the sensory analysis a clear off-odour was established in suspected sample of Coca-Cola from 0.2 l glass bottles from the Antwerp production site, production dated June 4, 1999.

The analyses performed by gas chromatography in combination with a sniffing technique (GC-SNIFF) allowed to detect the compound (H₂S, COS) responsible for this off-odour, but the concentration was below the limit of detection for identification by gas chromatography and mass spectrometry (GC-MS).

Experts concluded, "levels of hydrogen sulphide of 8-17 µg/l in Coca-Cola bottles are likely to produce a foul odour, which itself may bring about anxiety and stomach upset, and perhaps other anxiety symptoms such as profuse sweating. Other than this, no adverse health effects could be expected from the present, single exposure."

16.2 P-chloro-m-cresol (PCMC)

TNO employees with experience in sensory investigation confirmed a deviating odour characterised as "medicine like", outside the can. By GC-MS the compound responsible for the odour was identified as chlorocresol.

Experts concluded, "PCMP in the amount of 1.5µg externally on Coca-Cola cans is low compared to the levels of PCMC found in pharmaceuticals and cosmetics and background levels of phenolic

compounds with which human beings are normally exposed. In persons already sensitised to PCMC, the risk of skin reactions following contact with cans contaminated with 0.4µg/can is considered to be low. PCMC was not detected in the liquid portion".

Symptom expected with PCMC is eyes and skin irritation that were not the major symptoms described by the students. Only few students complained for eye irritation.

16.3 Bacteriological and virological analysis

Microscopic inspection and culture did not reveal the presence of viable micro-organisms in the sample of drinks taken in relation to the cases of Bornem.

Light microscopy magnification 1000 times did not show parasites.